

BEREZA, V.Sh.; LEONTENKOV, A.I., inzh., nauchnyy red.; TYUTYUNIK, M.S.,
red.izd-va; EL'KINA, E.M., tekhn.red.

[Automatic control of milling processes in ball mills] Avto-
matischeskoe regulirovanie protsessa pomola v sharovoi mel'nitse.
Moskva, Gos.izd-vo lit-ry po stroit., arkhitekt. i stroit.materialam,
1959. 73 p. (MIRA 12:8)
(Automatic control) (Milling machinery)

SOV/96-58-9-3/21

An Electro-acoustic Method of Automatic Control and Regulation of
Ball-mills

in the cement industry) shows that automatic control gives an increase of output of 10 - 15% and the milled particles are of more consistent size than when hand control is used. Performance charts of mills with manual and automatic control are reproduced in Fig 12. The merits of the regulators have not yet been fully evaluated but in view of the increased output, the higher quality of the product, the relatively low cost of the apparatus, also the improved working conditions that result, their widespread introduction is likely to be justified.

There are 12 figures, 1 table, 10 literature references
(5 Soviet, 3 English, 1 German, 1 Danish)

ASSOCIATION: 'Promstroyavtomatika' Trust, MS, RSFSR

1. Ball mills--Control systems
2. Materials--Handling
3. Ball mills--Test methods
4. Acoustics--Applications

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SOV/96-58-9-3/21

An Electro-acoustic method of Automatic Control and Regulation of
Ball-mills

spectrograms were produced from the records. Oscillograms, corresponding to different loadings of the mill, are given in Fig 7. From consideration of the various results, it is apparent that the frequency meter measures the Rice-frequency. The use of the Rice-frequency of the noise as the signal for an automatic control system determined the circuit of the electro-acoustic regulator. It comprises an electro-dynamic microphone, an electronic voltage amplifier and an electronic frequency converter; a schematic diagram is given in Fig 8. An elementary mathematical analysis shows that the output current is proportional to the frequency applied, but independent of the amplitude and wave-shape of the input signal. The automatic electro-acoustic regulator type RZM-3 is intended to maintain the load of a ball-mill at a level that gives the highest output for a given fineness of milling. A block circuit is given in Fig 9, and a schematic electric circuit in Fig 10, whilst the general appearance is shown in Fig 11. Operating experience with 220 regulators type RZM (mainly

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SOV/96-58-2-3/21

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Ball-mills

second. The height of the vertical lines on the spectrogram is proportional to the amplitude of the signal in the corresponding channel. The frequency scale laid out on the abscissus of Fig 4 is that charted in Fig 5. When the spectrogram results are worked out by Rice's formula there is satisfactory agreement with values of the Rice-frequency obtained from frequency-meter readings (see Table). It is considered that, as the load on the mill is increased, some of the vibrations of the mill casing are absorbed, especially the high-frequency vibrations. The spectrograms given in Fig 6 correspond to an overload on the mill and it will be noticed that there are two phases of overload. In the first the mill cannot take any more material and the excess is thrown back. If the feeders are then stopped the Rice-frequency drops appreciably after a few minutes. This is the second phase of overload. It is evident that the Rice-frequency actually depends on the fineness of the material in the mill as well as on the quantity. A pick-up, the circuit of which is given, was used to record the noise of mills on a magnetic-tape recorder, and noise

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An Electro-acoustic Method of Automatic Control and Regulation of Ball-mills

operator controlled the mill by ear and the record made with the acoustic regulator shows that the operator was guided mainly by the frequency. The noise produced by a mill is an undamped oscillation with a continuous spectrum; the noise e.m.f. is therefore an aperiodic time function. Thus the indication of the frequency meter is half the probable number of times that the noise e.m.f. passes through zero in one second. The probable number of times that a random function passes through zero per unit time was first calculated by S.O. Rice, whose formula is given. The author then introduces the concept of the 'Rice-frequency' which is half the probable number of zeros of the noise function e.m.f. per second. A formula is given by which to calculate the 'Rice-frequency' from the noise spectrum. A block diagram of an experimental apparatus for investigating the noise spectrum is given in Fig 3. The noise was applied to a frequency analyser and gave spectrograms such as those reproduced in Fig 4. The analyser scans the sound-frequency spectrum ten times a

Card 2/5

AUTHOR: Bereza, V.Sh. (Engineer)

SOV/96-58-9-3/21

TITLE: An Electro-acoustic method of Automatic Control and Regulation of Ball-mills (Elektro-akusticheskiy metod avtomaticheskogo kontrolya i regulirovaniya zagruzki sharovykh mel'nits razmalyvayemym materialom)

PERIODICAL: Teploenergetika, 1958, Nr 9, pp 19 - 26 (USSR)

ABSTRACT: As the quantity of material in the rotating drum of a mill alters, the noise intensity and frequency also alter. A microphone was installed beside a ball-mill and the noise e.m.f. was fed to a frequency-meter. When the mill was overloaded with material the frequency was 350 - 400 c/s whereas when it was normally loaded the frequency was 1000 - 1100 c/s. This relationship between the load on the mill and the noise-frequency forms the basis of electro-acoustic regulator type RZM-2, which is described in this article. This regulator was used to obtain the relationship between noise-frequency and the level of material in a ball mill given in Fig 1. It will be seen that over the working range the change of frequency is 6 - 8 cycles for 1 cm change of level. A diagram taken on a manually-regulated ball-mill is given in Fig 2; the

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SOV/96-58-6-2/24

The susceptibility to interference of electro-acoustic charge-regulators for ball-mills.

re-charged and was emitting maximum noise. The way in which the various mills fit into the criterial requirements is shown graphically in figs.7. and 8. The work shows that electro-acoustic mill feed-regulators are subject to interference from adjoining mills if they operate on the noise-amplitude principle, but that freedom from interference can be ensured by adopting the frequency-characteristic principle. This is confirmed in practice in cement-mills. There are 3 tables, 8 figures and 3 literature references (Soviet).

ASSOCIATION: Promstroyavtomatika Trust. (Trest Promstroyavtomatika)

1. Ball mills--Control systems 2. Noise--Analysis 3. Acoustics--Applications

The susceptibility to interference of electro-acoustic charge- 50V/96-58-6-2/24 regulators for ball-mills.

results are given in fig.4. As the milling media become worn the noise level of the mill drops, by 3 db in 15 days and by 9 db in 60 days. The diagrams were used to determine the levels of the useful- and interference-signals, with the results noted in table.2. These show that if re-charging is done at least every two weeks (and the Rules say it should be done every 100 hours) the difference between the useful- and interference-signals will always be greater than 6 db. This difference need be maintained only when the frequency ratio of the useful-signal and the interference-signal lies between 1 and 2; in practice, a smaller difference can be allowed, but there must always be a margin above the theoretical value, as shown by the equations (3). The criterion of non-interference is plotted in fig.5. to show the limits of amplitude and frequency between which the interference does no harm. The results of this investigation were verified by tests in the milling shop of a cement works, a plan of which is shown in fig.6; the experimental results are given in table.3. It is shown that, provided the criterial requirements are fulfilled, the frequency of the resultant signal is that of the useful signal. Of the six mills, five were not subject to interference. The sixth was susceptible but, due to modifications, it had a lower noise-level than usual, whereas another of the mills had just been

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SOV/96-58-6-2/24

The susceptibility to interference of electro-acoustic charge-regulators for ball-mills.

given. Its physical meaning is that when the two frequencies are summated, one of them predominates provided that the amplitude of the other is small enough; the latter then only distorts the wave-shape of the first. The applicability of the criterion in practice was confirmed by replacing the noise generators by tape-recordings of ball-mills. No interference was observed in tests covering the entire working range of frequencies and amplitudes. The criterial equation shows that under the most unfavourable conditions, when the interference-signal frequency is double that of the useful-signal, interference is avoided if the amplitude of the useful-signal is double that of the interference-signal. It was then necessary to find out whether the requisite conditions are fulfilled in practice - for example, how the noise level varies with distance from the mill - and tests were accordingly made in two cement works. The relationship between noise level and distance from the mill is plotted in fig.2. and general contours of the noise field in the milling department of a cement works is given in fig.3. The tests were made under various operating conditions. Interference-level measurements were made for the extreme cases of just before and just after re-charging the mill with balls or other milling media, and the

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AUTHOR: Bereza, V.Sh. Engineer SCV/96-52-6-2/24
 TITLE: The susceptibility^{to}/interference of electro-acoustic charge regulators for ball-mills. (Pomekhoustoychivost' elektroakusticheskikh regulyatorov zagruzhki sharovykh mel'nits razmalyvayemykh materialom.
 PERIODICAL: Teploenergetika, 1958, No.6. pp. 12 - 16.
 ABSTRACT: The main defect of the electro-acoustic method of controlling the feed to to ball-mills is interference from adjoining mills. The useful signal is defined as the noise-meter reading when all other mills but the one being examined are shut down; the interference is then the change in the meter reading when the other mills are started up. A brief mathematical treatment of noise summation is given, and shows that when the useful-signal is 6 db above the interference-signal, the interference is still 1 db; accordingly, interference will often be observed. Conditions are much more favourable if the noise-meter responds to the frequency characteristics of the noise, in particular to half the anti-node frequency. An experimental rig, illustrated diagrammatically in fig.1., was set up to determine the conditions under which interference becomes unimportant when the measurements are made in this way. There are two noise generators, one to represent the useful signal and one the interference; the microphone output is connected to a valve-voltmeter and to an electronic frequency-meter. Lengthy experimental work indicated criterial relationship, which is

Card 1/4

BEREZA, V.Sh.

Evaluating the precision of automatic control used for the milling process in ball mills. Nauch.dokl.vys.shkoly; energ. no.4: 165-173 '58. (MIRA 12:5)

1. Spetsial'noye proyektno-konstruktorskoye byuro avtomatiki tresta "Promstroyavtomatika" Ministerstva svyazi RSFSR.
(Automatic control) (Milling machinery)

BAREZA, V. Sh, Cond Tech Sci--(elec) "Study of automatic regulation of
the ^{milling} process of in a ball mill ^{by means} ~~with the utilization of an~~ electro-acoustic
entry signal." *Len*, 1939. 21 pp (Min of Higher Education USSR. *Len*
Electrical Engineering Inst in V.I.IL'yev (Lening)), 150 copies. Bibli-
ography: pp20-21 (11 titles) (EL,47-58,133)

BEREZA, V.Sh.; GEL'FAND, Ya.Ye.

Automatic control of dry and wet grinding processes in the cement industry. Trudy IO NTO Priborprom, no.3:188-194 '56. (MIRA 10#8)
(Grinding machinery) (Automatic control)

BEREZA, V.Sh., inzhener.

Evaluating the performance precision of electroacoustic regulators
for cement mills. TSement 21 no.6:26-30 N-D '55. (MLEA 9:5)
(Milling machinery) (Automatic control)

BEREZA, V. SR.

Automatic control of clinker feed to grinding mills. V. B.
Bereza. *Tekhnol.* 20 (2) 18-20 (1964). An electron control
feeding arrangement is described. Its application is considered
reliable and economical. II.Z.K.

BEREZA, V.G.

Nonferrous metallurgy of southern Kazakhstan. TSvet. met. 33 no.9:
21-27 S '60. (MIRA 13:10)
(Kazakhstan--Nonferrous metals--Metallurgy)

I 15323-66 EWT(m)/ENP(1)/T/ETC(m)-6 WW/RM

ACC NR: AP6000978

SOURCE CODE: UR/0286/65/000/022/0058/0058

AUTHORS: Korshak, V. V.; Vinogradova, S. V.; Salazkin, S. N.; Bereza, S. V.

ORG: none

TITLE: A method for obtaining homogeneous and mixed polyarylates. Class 39, No. 176401

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 58

TOPIC TAGS: polymer, polycondensation, phenol, polyaryl plastic, plastic

ABSTRACT: This Author Certificate presents a method for obtaining homogeneous and mixed polyarylates, an interphase polycondensation of dihydroxyphenols and chloro-anhydrides of dicarboxylic acids. To increase the variety of thermostable and soluble polyarylates, the imide of phenolphthalein-3,3-bis-(4-oxyphenyl)-phthalimide is used as the dihydroxyphenol.

SUB CODE: 11/07/ SUBM DATE: 27Jun63

Card

1/1 AC

UDC: 54-126:547.461.2'053
547.633.6

VINOGRADOVA, S.V.; KORSHAK, V.V.; SALAZKIN, S.N.; BEREZA, S.V.

Heterochain polyesters. Part 4: Synthesis of polyarylates of phenolphthalein anilide by interfacial polycondensation. Vysokom.soed. 6 no.9:1555-1558 S '64. (MIRA 17:10)

1. Institut elementoorganicheskikh soedineniy AN SSSR.

VINOGRADOVA, S.V.; KORSHAK, V.V.; SALAZKIN, S.N.; BEREZA, S.V.

Heterochain polyesters. Part 60: Polyarylate based on phenolphthalein anilide. Vysokom.sped. 6 no.8:1403-1406 Ag '64.

1. Institut elementoorganicheskikh soyedineniy AN SSSR.

(MIRA 17:10)

ABSTRACT

viscosity of the product was investigated. The optimum procedure, yielding a product with a reduced viscosity above 1.0 in triresol, consists of adding a solution of the chloroformide (in benzene, methylene chloride or chloroform) within 8-10 min. to a 0.2M alkaline solution of the amide (2.2 mol NaOH per 1.0 mol of amide) containing 0.1% of an emulsifier, with subsequent mixing for another 20 min. Original has 1.0 ml, and 2.0 g. of

ASSOCIATION: Russian chemical-organizational, sovietly AN SSSR (Institute of Chemical Physics, USSR)

DESCRIPTOR: 1.0 ml, 2.0 g. ENCL: 00 SUB CODE: 00

NOTES: NOV: 000 OTHER: 000

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ACCESSION NR: AP4043777

The properties of the polymers are discussed, the most significant being their ability to form transparent heat-resistant films withstanding temperatures of up to 250C. "L. L. Reshetnikova took part in the experimental work." Orig. art. has: 5 tables and 1 structural formula.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR (Institute of Organo-Metallic Compounds, AN SSSR).

SUBMITTED: 13Aug63

SUB CODE: OC

NO REF SOV: 003

OTHER: 001

Card 2/2

ACCESSION NR: AP4043777

S/0190/64/006/008/1403/1406

AUTHOR: Vinogradova, S. V., Korshak, V. V., Salazkin, S. N., Bereza, S. V.

TITLE: Heterocyclic polyesters. LX. Polyarylates based on Phenolphthalein anilide

SOURCE: Vy*sokomolekulyarny*ye soyedineniya, v. 6, no. 8, 1964, 1403-1406

TOPIC TAGS: polyester, polyarylate, phenolphthalein, phenolphthalein anilide, heterocyclic polyester

ABSTRACT: Using their method of equilibrium condensation described in Vy*sokomolekulyarny*ye soyedineniya 4, 339, 1962, with chlorodiphenyl in place of ditolylmethane as the solvent, the authors prepared polyarylates of 4,4'-diphenyldicarboxylic, terephthalic, isophthalic, diphenic, fumaric and sebacic acids with phenolphthalein anilide as the base. The phenolphthalein anilide was prepared by a procedure described by Albert (Berichte der deutschen chemischen Gesellschaft, 26, 3077, 1893); and technique of interphase polycondensation, which was also employed consisted of 1. adding a 0.1 benzene solution of chloroanhydride of the dicarboxylic acid to a 0.1 alkaline solution of phenolphthalein anilide, containing 0.9-1.0% of nekai, 2. thoroughly mixing for 20 min, and 3. precipitating the polymer with methanol, washing with methanol and hot water and drying in a vacuum at 80C.

Card 1/2

BEREZA, MIKHAIL GRIGOR'YEVICH

BEREZA, Mikhail Grigor'yevich

BEREZA, Mikhail Grigor'yevich (Astrakhan' State Medical Inst), Academic Degree of Doctor of Medical Sciences, based on his defense, 21 February 1955, in the Council of the 1st Moscow Order of Lenin Medical Inst, of his dissertation entitled: "Macrobiological Research on the Forensic Thanatological Practice. For the Academic Degree of Doctor of Sciences.

SO: Byulleten' Ministerstva, Vysshago Obrazovaniya SSSR, List No 20, 8 October 1955, Decision of Higher Certification Commission Concerning Academic Degrees and Titles.

BEREZA, M. G.

"Microbiological Investigation in Forensic Pathological Practice."
Dr Med Sci, First Moscow Order of Lenin Medical Inst, Moscow, 1955.
(KI, No 8, Feb 55)

SO: Sum No. 631, 26 Aug 55 - Survey of Scientific and Technical
Dissertation Defended at USSR Higher Educational Institutions.
(14)

BEREZA, I.M., mekhanik

Where the machine operates the grain does not perish. Mekh. sil'.
hosp. 14 no.6:9 Je '63. (MIRA 17:3)

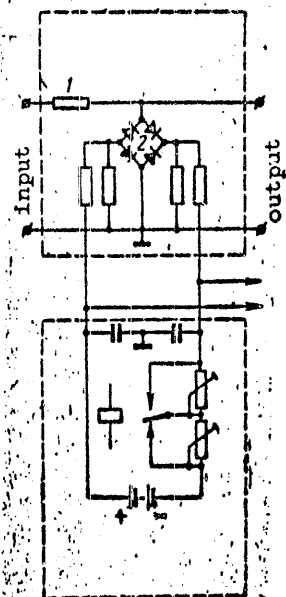
1. Kolkhoz im. Parizhskoy Kommuny, Yagotinskogo proizvodstvennogo
upravleniya, Kiyevskoy oblasti.

ASC NR: AP6021460

SUB CODE: 08, 09/ SUBM DATE: 13May65

Card 2/2

1 ← resistor
2 ← diode switch



ACC NR: AP6021460

SOURCE CODE: UR/0413/66/000/011/0080/0080

INVENTOR: Drozdov, A. A.; Bereza, G. V.; Kochepasov, A. P.; Maksimok, N. V.; Sharikov, V. V.

ORG: None

TITLE: A device for centralized control of the amplitude of seismic signals in seismic stations. Class 42, No. 182353 [announced by the All-Union Scientific Research Institute of Geophysical Exploration Methods (Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 11, 1966, 80

TOPIC TAGS: nonelectric signal equipment, seismology

ABSTRACT: This Author's Certificate introduces a device for centralized control of the amplitude of seismic signals in seismic stations. The installation contains a mechanical stepper switch. Reliability is improved by installing a voltage divider at the input of each channel of the seismic station. One arm of this divider is a resistor connected in series with the signal circuit, while the other is a bridge type diode switch connected in parallel with the signal circuit.

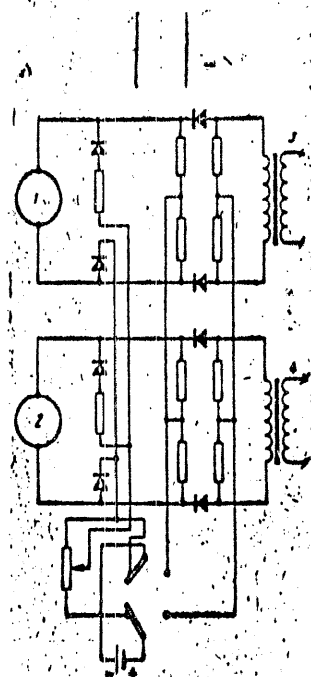
Card 1/2

UDC: 550.340.19

ACC NR: AP6021457

SUB CODE: 09, 08/ SUBM DATE: 16Mar65

1 and 2--seismic
detectors; 3 and
4--amplifiers



Card 2/2

ACC NR: AP6021457

SOURCE CODE: UR/0413/66/000/011/0079/0079

INVENTOR: Bereza, G. V.; Drozdov, A. A.

ORG: None

TITLE: A device for checking the agreement between seismic detectors. Class 42, No. 182350 [announced by the All-Union Scientific Research Institute of Geophysical Exploration Methods (Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 11, 1966, 79

TOPIC TAGS: seismology, electronic measurement, electronic equipment

ABSTRACT: This Author's Certificate introduces a device for checking the agreement between seismic detectors. The installation contains seismic prospecting amplifiers and seismic detectors. Measurement accuracy is improved by connecting a symmetric bridge-type diode switch between each seismic detector and the corresponding amplifier. The control diagonals of all bridges are tied together and connected to the voltage source.

Card 1/2

UDC: 550.340.84

J. 24480-66 EWT(1)/EWA(h) GW
 ACC NR: KP6009270 (N) SOURCE CODE: UR/3152/65/000/006/0028/0033

AUTHOR: Bereza, G. V.; Galuzo, L. P.

ORG: none

TITLE: Experimental basis for selection of filter parameters in a wide-range seismic station ✓

SOURCE: Razvedochnaya geofizika, no. 6, 1965, 28-33

TOPIC TAGS: filter circuit, seismic prospecting, seismography ✓

ABSTRACT: The authors discuss the results of tests made in 1959-1961 for selection of high- and low-frequency filters for the seismic amplifiers of a wide-range seismic prospecting station. A comparison of seismograms from Krasnodar, the Ukraine and Azerbaydzhan taken during industrial tests of the wide-range station using various types of filtration shows that there are cases where the use of a steep cutoff in frequency characteristics (below 40 db/oct) gives a clearer picture of the geologic structure. There are also many cases where the simultaneous use of two types of filtration gives fuller clarification than either type alone. In some sections, a change in filtration has no particular effect on the geologic results. A table is given showing optimum parameters for high- and low-frequency filtration in various sections of the three geographic regions studied. Orig. art. has: 3 figures, 1 table.

SUB CODE: 08/ SUBM DATE: 00/ ORIG REF: 005/ OTH REF: 000

Card 1/1 PB

BEREZA, G.V.

Checking the identity of the channels of seismic prospecting
stations under laboratory conditions. Razved. geofiz. no.5:
21-26 '65. (MJRA 18:9)

BEREZA, G.V.

Device for programming seismic vibrations. ~~Received~~ 1 prop. geofiz.
no.46:20-24:162. (MIRA 16:3)
(Seismic prospecting--Equipment and supplies)

BEREZA, Georgiy Vasil'yevich; SLUTSKOVSKIY, A.I., red.; ZARETSKAYA,
A.I., vedushchiy red.; POLOSINA, A.S., tekhn.red.

[Checking and controlling seismic equipment] Proverka i regulirovka seismicheskoi apparatury. Moskva, Gos.nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1959. 85 p. (MIRA 12:10)
(Seismometers)

~~BYRREZA~~

Laboratory apparatus for the frequency analysis of seismic vibrations. Prikl. geofiz. no.16:37-49 '57. (MLRA 10:8)
(Seismometers)

BEREZA, G.V.

POLSHKOV, M.K.; ~~BEREZA, G.V.~~

Using wide-band equipment in seismic prospecting. Razved. i prom.
geofiz. no.16:63-67 '56. (MLRA 10:8)
(Prospecting---Geophysical methods)

Handwritten: G.V.
BEREZA, G.V.; SLUTSKOVSKIY, A.I.; POLSHKOV, M.K.

Frequency analysis of seismic vibrations. Prikl. geofiz. no. 11:92-123
'54. (MLRA 8:10)
(Seismology)

BULATOV, P.K.; NAUMENKO, A.I.; USPENSKAYA, Ye.P.; BEREZA, A.L.

Treatment of children with bronchial asthma under conditions of a pressure chamber. Sov. med. 28 no.1:97-100 Ja '65. (MIRA 18:5)

1. Gospi'tal'naya terapevticheskaya klinika (zav. - zasluzhennyy deyatel' nauki prof. P.K.Bulatov) i fiziologicheskii ot'del Tsentral'noy nauchno-issledovatel'skoy laboratorii (zav. - dotsent A.I.Naumenko) I Leningradskogo meditsinskogo instituta imeni Pavlova.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800028-6

BEREZA, A.I., kand. tekhn. nauk (Saratov); CHEKHUNOV, V.I., kand.
tekhn. nauk (Saratov)

Study of a whirlpool type flocculation chamber for a hori-
zontal clarifying tank. Vod. i san. tekhn. no.11:3-6 N '63.
(MIRA 17:1)

BEREZA, A.I.; ALEKSEYEV, V.V.; ANDREYEV, V.M.

Operation of settling basins at the Saratov Refinery.

Khim. i tekhn. topl. i masel 8 no.10:27-29 0 '63.

(MIRA 16:11)

1. Saratovskiy politekhnicheskiy institut.

BEREZA, A.I., inzh. (Saratov); CHEKHUNOV, V.I., inzh. (Saratov)

Hydraulic system of a horizontal water-supply clarifying tank.
Vod. i san. tekhn. no.6:10-12 Je '62. (MIRA 15:7)
(Water--Purification)

ANDREYEV, V., inzh.; BEREZA, A., kand.tekhn.nauk (Saratov)

Operation of water-intake installations on ice-covered
rivers. Zhil.-kom.khoz. 9 no.11:11-13 '59. (MIRA 13:2)
(Water-supply engineering) (Ice on rivers, lakes, etc.)

Empirical Data of Sludge Ice Occurrences at the
Rivers Baksan and Malka

SOV/50-59-6-0/17

station, and the respective diagram is shown in figure 3.
There are 3 figures and 2 Soviet references.

Card 2/2

3(7)

AUTHOR:

Bereza, A. I.

SCV/50-59-6-8/17

TITLE:

Empirical Data of Sludge Ice Occurrences at the Rivers Baksan and Malka (Opytnyye dannyye o shugovykh yavleniyakh na rekakh Baksan i Malka)

PERIODICAL: Meteorologiya i gidrologiya, 1959, Nr 6, pp 32 - 34 (USSR)

ABSTRACT: The hydrological main centers of the Terek-Kuma system are situated at the rivers Baksan and Malka. In winter these constructions meet with great difficulties because of sludge ice. Measurements were made to determine the quantity of sludge ice at the river cross section of the hydroelectric power stations. Measurements were made with the usual method by means of a cylindrical instrument designed for the purpose and a stop watch. The $q = f(T)$ diagrams for Malka and Baksan are also given here. Sludge ice accumulations at the Baksan amount to 3-4 times those at the Malka. The formula is written for the evaluation of the sludge ice discharge at one cross section of the river. This formula is then rewritten to be used for the cross section of the Baksan hydroelectric power

Card 1/2

BEREZA, A.I., assistant

Great economy of money and labor. Zhivotnovodstvo 20 no.11:82-83
N '58. (MIRA 11:11)

1. Kafedra gidravliki i vodosnabzheniya Saratovskogo avtodorozh-
nogo instituta.
(Water supply, Rural)

BEREZA, A.I. (Saratov)

Controlling the formation of ice on water intake installations.
Vod. i san.tekh. no.11:18-19 N '58. (MIRA 11:12)
(Water pipes--Cold weather conditions)

SOV/50-58-10-10/20

Experimental Data on the Growth of Ice in Irrigation Canals

ther, the formula of the increase in thickness of the ice covering (3) is given. Table 1 shows a comparison of experimental data with the values computed according to formula (3). Ice grows irregularly in connection with the cooling of the water along the canal, and with the ice formation starting from the terminal sections. Figure 2 gives data for a channel with a flow velocity of 0.5 m/sec. Thus, it is to be seen that the thickness of ice covering increases with the gradual heat loss. On account of observations by the author, a table can be composed which indicates the ice growth per unit of length of the canal at different flow velocities under the ice (Table 3). A formula is given for this dependence. Table 4 gives data on the increase in ice thickness along canals on account of actual measurements and computed according to formula (4). The correct determination of the ice thickness, and the consideration of the increase in ice thickness, facilitate the selection of the most rational shape of canal section and other parameters. There are 4 tables and 2 Soviet references.

Card 2/2

3(0)

SOV/50-58-10-10/20

AUTHOR:

Bereza, A. I.

TITLE:

Experimental Data on the Growth of Ice in Irrigation Canals
(Opytnyye dannyye o roste l'da v obvodnitel'nykh kanalakh)

PERIODICAL:

Meteorologiya i gidrologiya, 1958, Nr 10, pp 40-42 (USSR)

ABSTRACT:

The author investigated the character of growth of the ice sheet on the Terek-Kuma irrigation system (North Caucasus). He used 2 channel sections with different water velocities for 5 days from the time of ice formation. The figures determined by the author (Table 1) confirmed the indications of references 1 and 2. Assuming the growth intensity of the ice in standing water (l_0) as initial value, he gives formula (1) for the decrease of growth intensity of the ice (Table 3). He also gives the values of the same intensity (1) for different mean flow velocities of the water. The most important factor acting upon the ice sheet is air temperature. The increase in ice thickness is proportional to the sum of negative air temperatures from the moment of ice formation. From this, the author derives the general dependence of the thickness of ice covering (2). Fur-

Card 1/2

BERNZA, A.I.

Damage of head intake structures of water supply systems as a result
of floating ice. Izv.vys.ucheb.zav.; stroi. i arkhitekt.no.5:101-106
' 58. (MIRA 12:1)

1. Saratovskiy avtomobil'no-dorozhnyy institut.
(Hydraulic engineering) (Ice on rivers, lakes, etc.)

BEREZA, A. I.

TER-ABRAMYANTS, T.A., kandidat tekhnicheskikh nauk; BEREZA A.I., inzhener.

Sludge ice control on irrigation canals. Gidr. i mel. 9 no. 2:40-
45 F '57. (MLRA 10:3)
(Caucasus, Northern--Irrigation canals and flumes)

SOV/112-57-9-18509D

Translation from: Referativnyy zhurnal, Elektrotehnika, 1957, Nr 9, p 58 (USSR)

AUTHOR: Bereza, A. I.

TITLE: Winter Working Period and Peculiarities in Designing Water-Supply Canals
(Zimniy period raboty i osobennosti proyektirovaniya obvodnitel'nykh kanalov)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of
Candidate of Technical Sciences, presented to Vses. n.-i. in-t gidrotekhn. i
melior. (All-Union Scientific-Research Institute of Hydroengineering and Land
Reclamation), Moscow, 1956.

ASSOCIATION: Vses. n.-i. in-t gidrotekhn. i melior. (All-Union Scientific-
Research Institute of Hydroengineering and Land Reclamation)

Card 1/1

Experiments on the industrial ...

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S/136/61/000/007/002/002
E111/E480

for highest strength. Resistance strain gauges were used to measure rolling pressure. Because of the different mechanical properties of the layers, the equation for the average working stresses P_{av} for each deformed layer assumes the form

$$P_{av} = \frac{P_{tot}}{B_{av} \sqrt{D \Delta h}}$$

where P_{tot} is the total roll force in kg; B_{av} is average strip width before and after rolling, mm; Δh is absolute reduction of one of the layers, mm; D is roll diameter, mm. Calculations show that with 4.6 and 6.2 mm thick strip, a decrease in average specific pressure in the first pass is also a factor leading to poor adhesion. R.A.Peskina and A.S.Gulyayev participated in the work. There are 2 figures, 4 tables and 10 Soviet references.

ASSOCIATIONS: Mikhaylovskiy zavod po obrabotke tsvetnykh metallov (Mikhaylov Non-Ferrous Metals Treatment Works)
A.A.Berez; Institut tsvetnykh metallov im.
M.I.Kalinina (Non-Ferrous Metals Institute imeni
M.I.Kalinin) V.K.Korol' and I.L.Perlin

Card 4/5

Experiments on the industrial ...

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very close tolerances, the authors studied factors influencing distortion of the individual layers. Pack rolling of different alloy/iron thicknesses and ratios was carried out with pack thicknesses of 12.9 to 16.86 mm (approximating to industrial practice). The two-high mill was used, 52 to 54% reduction being effected per pass. After rolling, the thickness of individual layers was measured by a published method (Ref. 8: Gostev, B.I., Zil'berg, Yu. Ya. Aluminium Alloy ACM (ASM) for Heavily Loaded Bearings, GITI mashinostroitel'noy literatury, Moscow, 1959). Neither pack thickness nor thickness ratios had any effect on deformation. The final and initial thickness h_o and H_o of the pack and the final and initial thicknesses h_F and H_F of the iron were found to be related by the expression

$$h_o/h_F = (H_o/H_F)^{0.81}$$

Recommended rolling conditions for bimetallic strip of 3.6, 4.6 and 6.2 mm thickness are shown in Table 3. Shear-strength investigation of bimetal specimens taken after each pass showed that generally this rises with increasing degree of deformation; however, heat treatment after reductions of over 50% is essential

Card 3/5

Experiments on the industrial ...

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at 1.3 m/sec rolling speed with 22 to 30% reduction per pass. Rolling was continued to a clad-billet thickness of 5.5 to 6 mm, the ingot being 30 and the aluminium 1.3 to 10 mm initially. The aluminium and TsAM9-1.5 ingot surfaces were wire-brushed. Only aluminium blanks thicker than 8.6 mm showed signs of creeping off, but still to a very small extent. The work confirms results obtained previously (Ref.2) on thinner ingots. To find the aluminium thickness giving the best adhesion, 5.5 to 6 mm thick alloy strips clad with various thicknesses of aluminium were levelled and cut into 235 to 420 mm sheets; these were annealed at 250°C and pack cold-rolled with a pickled 7.2 x 235 x 500 mm billet of armco iron. A two-high mill (700 mm roll diameter) was used with paraffin as the lubricant. The iron and aluminium surfaces were wire-brushed. Satisfactory adhesion of the alloy with iron occurred only with aluminium cladding originally 8.6 and 10 mm thick. Unsatisfactory adhesion was due to high residual stresses (Ref.3: Aynbinder, A.B. Izd-vo AN Latviyskoy SSR, Riga, 1957) and irregularities of the contacting surfaces. Since thicknesses of base and cladding in bimetal strip are required to

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E111/E480

AUTHORS: Berez. A.A., Korol', V.K., Perlin, I.L.

TITLE: Experiments on the industrial production of
zinc alloy - armco iron bimetal strip

PERIODICAL: Tsvetnyye metally, 1961, No.7, pp.65-69

TEXT: Laboratory investigations by the authors (Ref.1: Korol' B.K., Bushe N.A. VNII zheleznodorozhnogo transporta, Transzhellorizdat, Moscow, 1959 and Ref.2: Korol' B.K., Perlin I.L. Byull, TsIIN TsM, 1961, No.3) showed that, in principle, bimetal strip of alloy ЦАМ9-1.5 (TsAM9-1.5) with armco iron could be produced by rolling: subsequent tests on bearings of the material were successful. For wider service tests a batch of the bimetal strip produced under industrial conditions was needed. Its production served also as a check of the proposed (Ref.2) rolling conditions consisting, essentially, in the production of an aluminium-clad billet of TsAM9-1.5 alloy and its combined rolling with armco iron. The aluminium was of АД1 (AD1) or AO grade and served as the binder. It was clad onto the alloy by hot rolling (250 to 270°C) on a two-high mill (650 mm dia rolls) Card 1/5

BEREUTSINA, L.P. (Moskva)

Discussion on experimental work in the periodical "IUnyi
naturalist". Biol. v shkole no.1:93-95 Ja-F '63.

(Nature study--Periodicals) (MIRA 16:6)

BEREUTSINA, L.P. (Moskva)

"More precious than gold," a collection of articles. Biol. v
shkola no.3:93-95 My-Je '63. (MIRA 16:10)

BEREUTSINA, L.P. (Moskva)

Discussing the periodical. Biol. v shkole no.2:90-91 Mr-Ap
'62. (MIRA 15:2)
(Biology--Periodicals)

BERETZK, Peter, dr.

Manifestation of parental and self-preservation instincts
of the penduline titmouse observed in connection with their
damaged nests. Aquila 69/70:271-272 '62-'63 [publ. '64].

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800028-6

SCHMIDT, Egon; STERBETZ, Istvan; GYERESSY, Antal; SCHAFER, Lajos; TERNYAK, Jeno;
MATE, Laszlo; GEREBY, Gyorgy; BERETZK, Peter, dr.

Data on the avifauna of the region between the Danube and the
Tisza. Aquila 69/70:258-260 '62-'63 [publ. '64].

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800028-6

MIKUSKA, Jozsef; JAKAB, Andras; AUMULLER, Istvan; PORGA, Zoltan; GYORY, Jeno;
PATKAI, Imre, dr.; SCHAFER, Lajos; BERETIK, Peter, dr.; GEREBI, Gyorgy
Rare goose and duck occurrences. Aquila 69/70:257-258 '62-'63
[publ. '64].

130,607

4

Material for shoe soles. Péter Hegedűs, Hung.
 130,607, Dec. 15, 1942. Powd. leather wastes (50%) are
 mixed with 25% celluloid and 25% castor oil or tritolyl
 phosphate and pressed into sheets. István Fényi

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800028-6

BERETTYAN, János

Magyar Tudományos Akadémia Könyvtára és Információs Központja

Territorial distribution of language in Hungary, 1981-1986.
Munka szemle 9 no.2:2-48 2 165.

TIMAR, Janos; BERETTYAN, Laszlo

Structure of the employment in Hungarian counties. Munka szemle 5 no.1:
4-11 Ja '61.

1. O.T. munkatarsa (for Berettyan).

BERETSKIY, Mark Mikhaylovich; LEBEDOVSKIY, M.S., red.

[Devices for conveying and accumulating parts in automatic lines] Ustroistva dlia transportirovki i nakaplivaniia detaliei v avtomaticheskikh liniiax. Leningrad, 1964. 18 p. (Leningradskii dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Mekhanichskaia obrabotka metallov, no.2) (MIRA 17:7)

ILLEGIBLE

Каталитическая активность гидроксидов.

B-9

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30059

activity. The catalytic activity of freshly precipitated hydroxides decreases in the series $\text{Co} > \text{Ni} > \text{Cu} > \text{Fe}$, and the activity of specimens after aging decreases in the series $\text{Co} > \text{Fe} > \text{Cu} > \text{Ni}$. Of the investigated 2-component catalysts the most active and stable are I + IV, and of the 3-component ones, I + III + IV. In the opinion of the authors, a particularly high activity, and stability to aging, is characteristic of the 2-component systems which include hydroxides that exhibit sharply distinct activity in freshly prepared condition. When the composition of catalysts is made more complex, there is often observed a change in the order of the reaction, from first to fractional or zero order. On aging of the catalysts the order of the reaction changes in the opposite direction.

Card : 2/2

-24-

BERETSKIS, B. V.

Category: USSR / Physical Chemistry - Kinetics. Combustion.
Explosives. Topochemistry. Catalysis.

B-9

Abs Jour: Referat Zhur-Khimiya, No 9, 1957, 30059

Author : Prokopchik A. Yu., Beretskis B. V.

Inst : Academy of Sciences Lithuanian SSR

Title : Effect of Aging on Catalytic Activity of Some Hydroxide Catalysts

Orig Pub: Liet. TSR mokslu Akad. darbai, Tr. AN LitSSR, 1956, 5B, 41-55

Abstract: Study of the effect of aging, at room temperature, on the catalytic activity of gels of Ni(OH)_2 (I), Co(OH)_2 (II), Fe(OH)_2 (III), Cu(OH)_2 (IV), (and also of a number of their 2- and 3-component mixtures), as concerns the reaction of oxygen decomposition of Ca(ClO)_2 in alkaline, aqueous solution at 40° . It is shown that on aging the activity of catalysts I, and particularly of II and III, decreases, in the opinion of the authors due to recrystallization and increase in particle size. On aging of freshly prepared IV its activity drops sharply at first, almost to a zero level, but after prolonged aging the catalyst IV exhibits a slight but still appreciable catalytic

Card : 1/2

-23-

DOMSHA, A. [Domsa, A.]; KOVANS, S.; MYULLER, G. [Muller, G]; BERETSKI, T.
[Berecki, T.]; KOLAN, Kh. [Colan, H.]

Investigating processes of preparing ceramic metal contactor
materials for electric engineering purposes. Porosh. met. 2 no.3:
99-109 My-Je '62. (MIRA 15:7)

1. Kluzhskiy politekhnicheskii institut, Rumynskaya Narodnaya
Respublika.
(Ceramic metals) (Electric contractors)

L 44056-66 EWP(j)/T IJP(c) RM

ACC NR: AP6032674

SOURCE CODE: HU/0005/66/000/002/0077/0078

AUTHOR: Kollar, Laszlo; Borocz, Laszlo--Berets, L.; Simon, Artur--Shimon, A.; 28
Ernő, HorváthORG: Research Institute for the Plastics Industry, Budapest (Muanyagipari Kutató
Intézet) RTITLE: Study of the α -TiCl₃:AlEt₃ catalyst system

SOURCE: Magyar kémiai folyóirat, no. 2, 1966, 77-78

TOPIC TAGS: propylene, catalytic polymerization

ABSTRACT: The effects of the TiCl₃:AlEt₃ ratio on the polymerization of propylene was investigated in terms of the reaction taking place between these two catalyst components (cf. Simon, A., Kollar, L., and Borocz, L.; Monatsh. Chem., vol. 95, 1964, p. 842). In general, this reaction reduced the effectiveness of the system as a catalyst. The extent of this effect was followed by an X-ray determination of the crystalline TiCl₃ content in the catalyst mixture. The X-ray determinations were performed by the Department for Polymer Micromorphology (Polimermikromorfologiai Osztály) at the Research Institute for the Plastics Industry. Orig. art. has: 5 figures. [JPRS: 34,805]

SUB CODE: 07 / SUBM DATE: 08Jun65 / OTH REF: 005

Card 1/1 blg.

0919 2799

KOSHLIYAK, V.A.; BERETO, Ya.A.

Two stages and the time of the formation of oil and gas pools in the reef zone of the cis-Ural trough. Sov. geol. 8 no.4:136-140 Ap '65.

(MIRA 18:7)

1. Treat "Bashneftegeofizika" i Vsesoyuznyy nauchno-issledovatel'skiy institut prirodnogo gaza.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800028-6

BERETO, Ya.A.

Paleotectonics of and prospects for finding gas and oil in the
Yyesk-Berezan' region. Trudy MINKHIGP no.43:89-97 '63.

(MIRA 17:4)

SUDARIKOV, Yu.A.; BERETO, Ya.A.; MEDVEDEV, N.F.

Tectonics and the history of the formation of the Kanevsko-
Berezan swell of the Azov arch. Trudy MINKHIGP no.36:102-118
'62. (MIRA 15:6)
(Krasnodar Territory--Geology, Structural)
(Rostov Province--Geology, Structural)

BORUSHKO, V.S., inzh.; BUNER, V.B., inzh.; BERESTYUKOV, V.N., inzh.;
KHVAL'KOVSKIY, A.V., kand. tekhn. nauk

Some relationships between winding rod insulation damage
of high-voltage generators and different parameters of
the rods. Elektrotehnika 36 no.8:11-13 Ag '64.

(MIRA 17:9)

BERESTOVSKIY, G.N.

Characteristics of electric model of the nerve fiber under the
conditions of a fixed potential. Biofizika 10 no.5:801-804, '65.
(MIRA 18:10)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta
imeni M.V.Lomonosova.

BERESTOVSKIY, G.N.

Relation between the impedance and pulse distribution rate and the axon diameter. Biofizika 10 no.3:526-527 '65.

(MIRA 18:11)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta imeni Lomonosova. Submitted April 9, 1964.

BERESTOVSKIY, G.N.

Auto-oscillations and impulse with delay in the model of a
single Ranvier's node. *Biophizika* 10 no.4:713-716 1965.
(MIRA 18:2)

1. Fizicheskiy fakul'tet Moskenskogo gosudarstvennogo
universiteta, Moskva.

APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R000204800028-6

1. NAME:

2. ADDRESS:

3. OCCUPATION: (If a student, name of university or college and city and state of residence)

4. PHONE:

5. COUNTRY:

6. SUB CODE: (If any)

7. DATE:

8. TIME:

9. PAGE: (If any)

Card

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10-3215-41

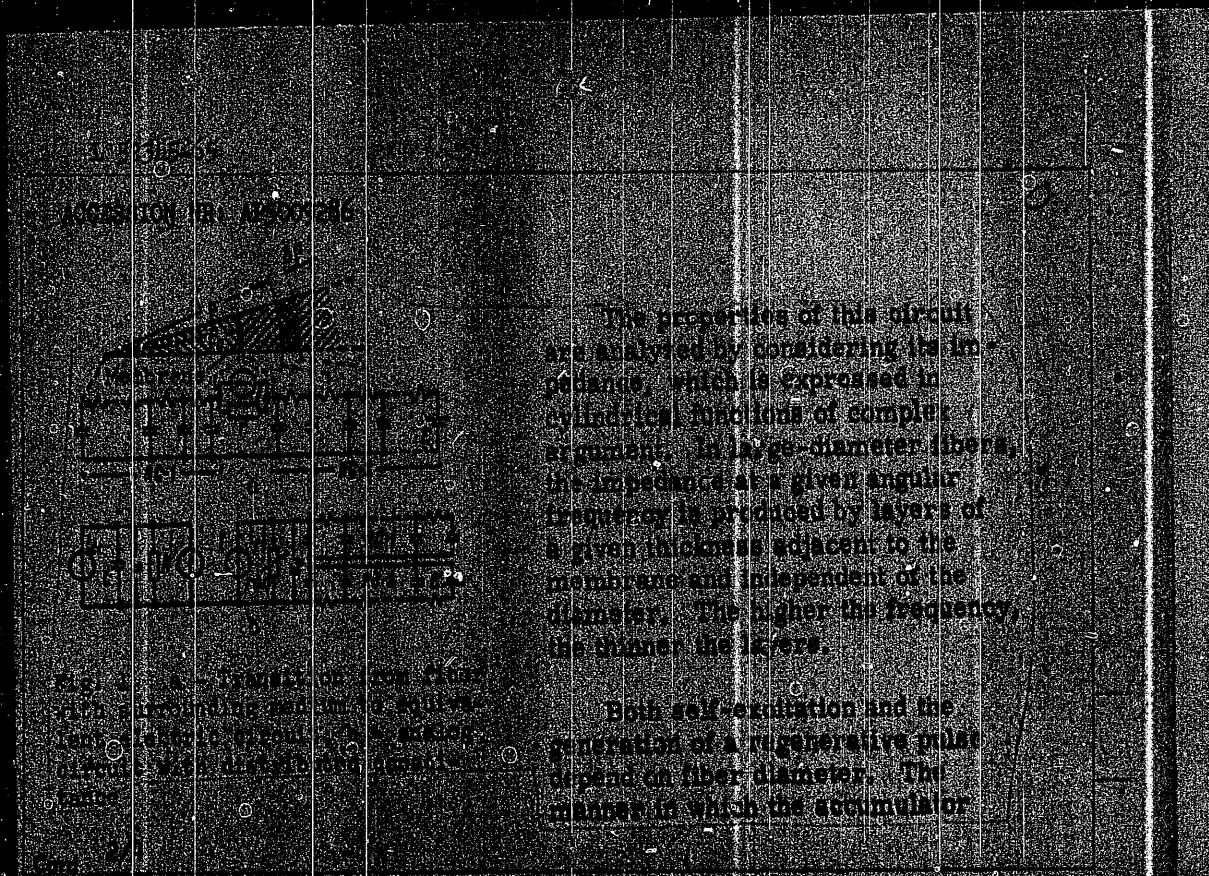
APR 196100 HA 1752 328

Voltage changes also depend on fiber diameter, especially during the recovery phase. The voltage recovery process can be both aperiodic and oscillatory, and the oscillations can either attenuate or build up. In the latter case self-excitation can take place in the cell.

The reaction of the axon to prolonged external effects is also examined by considering the simplest transient process which occurs as a result of sharp variations in the displacement current. RC-1 and RC-2 type of discharge currents are responsible for characteristic increases and decreases in the frequency of the regenerative pulse during the transient process.

It is concluded that the model studied is the analog of a sensitive nerve and in which the generator potential is converted into a series of pulses. Adaptation of the model depends on the variation of the total charge of the RC-1 circuit. By analogy, it is concluded that one of the causes of nerve fiber adaptation is the change in the total number of ions in the axoplasm. The absence of the subthreshold activity in systems operating in the self-oscillating mode explains the spontaneous activity observed in the majority of afferent nerve fibers. (Orig. ser. No. 5 figures)

Card 5



The properties of this circuit are analyzed by considering its impedance, which is expressed in cylindrical functions of complex argument. In large-diameter fibers, the impedance at a given angular frequency is produced by layers of a given thickness adjacent to the membrane and independent of the diameter. The higher the frequency, the thinner the layers.

Both self-excitation and the generation of a regenerative pulse depend on fiber diameter. The manner in which the accumulator

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Abstract

Abstract

Abstract

Abstract

BERESTOVSKIY, G.N.

Electrical analogy of sensitive nerve ends. Radiotekh. i elektron.
8 no.12:2099-2101 D '63. (MIRA 16:12)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta
im. M.V.Lomonosova.

BERESTOVSKIY, G.N.

Study of an electrical model of a neuristor. Radiotekh. i elektron. 8 no.11:1862-1871 N '63. (MIRA 17:1)

1. Fizicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.

BERESTOVSKIY, G.N.

Effect of asymmetry on the operation of a push-pull connected transistor current converter with external excitation. Radio-tekh. i elektron. 6 no.5:844-846 My. '61. (MIRA 14:4)

1. Fizicheskiy falul'tet Moskovskogo gosudarstvennogo universiteta imeni M. V. Lomonosova.

(Electric current converters)

BURESTOVSKIY, G.

Errors could have been avoided. Radio no. 9:64 S '61.
(MIRA 14:10)
(Electric current converters)

89824

S/107/61/000/002/002/003
E073/E535

Bioelectricity and the Cell

molecular biology. Radio spectroscopy investigations (Laboratoriya fizicheskoy khimii biopolimerov AN SSSR, Laboratory of Physical Chemistry of Biopolymers, AS, USSR) of the physical properties of nucleic acids, which are the carriers of hereditary information in the cells, revealed anomalous magnetic properties which are similar to the antiferromagnetic properties of substances and the associated anomalies in the electrical properties are similar to those encountered in ferroelectrics. In view of the fact that ferroelectrics are being used for memories in computers, it is easy to understand the major interest of scientists in these effects of biopolymers in conjunction with problems of hereditary and study of the mechanism of memory in living beings. There are 4 figures.

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Bioelectricity and the Cell

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the pulse through a high frequency transformer, using a 1 to 3 Mc/s carrier frequency and then to obtain the rectangular stimulator pulse from the secondary circuit by using a detector circuit. Such a transformer is usually made without an iron core, which has the disadvantage of very high leakage. Transformers with ferrite cores have a low leakage but the capacitance between the windings is increased, which is undesirable. Yu. M. Lebedev-Krasin (Radiotekhnika, 1957, No.9) described a special transformer in which each of the windings is wound on its own toroidal ferrite core and the coupling between the magnetic fluxes of the cores is effected by means of a short-circuited turn in the form of two brass cups bolted together. An electrostatic screen, a brass disc, is placed between the two cores. The mass of the transformer is grounded. Such a transformer has a negligible transfer capacitance and is suitable for operation in the frequency range of 1 kc/s to 100 Mc/s. For measuring the electric parameters of nerve and muscle fibres, electronic circuits are used, particularly a.c. (10 to 100 kc/s) bridges. The high frequencies are chosen because at such frequencies even higher voltages will not influence the state of the object under investigation. A new field of biological investigation is

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Bioelectricity and the Cell

minimum grid currents (10^{-11} to 10^{-12} A). To reduce input capacity, cathode repeaters are used and to reduce the capacitance to ground of the grid connection the tube, together with the grid input lead, are screened and the screen is connected to the cathode. However, even in this case a capacitance of the order of 2 to 5 pF will remain. The circuit, Fig.3a, enables obtaining an input capacitance of 0.1 pF and a input resistance of 10^{10} ohms. If it is not possible to ground one of the micro-electrodes, bipolar leads have to be used for tapping off the potentials. In this case, the input stage, as well as the amplifier, have to be of the balance-differential type, a two-stage amplifier with a high resistance in the cathode circuits of both tubes (Fig.3b). For counter phase input signals, the gain in a stage can be 100 to 1000 times as large as synphase input signals. For exciting cells, stimulator oscillators are used, which produce square-topped voltage pulses of durations of tens of μ sec to several sec with various pulse sequences. The output of the stimulator must be insulated from the ground otherwise it would be transmitted by the object and recorded on the oscillograph. The problem can be solved by transmitting

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Bioelectricity and the Cell

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E073/E535

5 to 6 times higher than the excitation threshold, so that even if the signal is received by the third link with considerable attenuation it will still be strong enough to excite it. The transmission of information to differing organs of the body is effected by changing the frequency of the pulse sequence along the appropriate axons and also by changing the number of active axons. The muscles are similarly controlled; excitation pulses produce contraction of the muscles, the intensity of which increases with increasing pulse frequency. If the axon is in the excited state, the resistance of the membrane is sharply reduced along an ion flow; the potential difference on the membrane drops and even changes sign. Following that, the particular part of the fibre reverts to the initial state. For recording bioelectric signals tapped off by means of micro-electrodes, high gain (10^3 to 10^6) amplifiers with high input resistance (10^9 to 10^{11} ohm) and a wide passband are required. It is difficult to produce high resistance input stages. However, this problem can be easily solved by circuits designed for tapping off d.c. potentials. Either electrometric tubes or other types of ordinary tubes are used with operating regimes such as to obtain

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E073/E535

Bioelectricity and the Cell

a condenser. The position appears to be similar to that in a P-N junction of semiconductor diodes. Experiments on the activity of nerve fibres are made by means of artificial excitation with square-topped pulses of a few msec duration. Fig.2 shows a sketch of a set-up for studying the electrical phenomena in an axon in the excited state. The figure also contains an oscillogram of a pulse which propagates along the fibre and is received by a micro-electrode placed inside the cell. The pulse amplitude is 100 to 120 mV, its duration between one and several msec. The parameters of the pulse do not depend on the excitation force and remain relatively constant during their passage through the axon, i.e. they propagate without attenuation. This is the case only if the excitation current exceeds the threshold value, which is such that induced e.m.f. from adjacent excited fibres (0.1 to 1 mV) does not lead to erroneous excitation of a given axon (high noise suppression). As a rough approximation, the axon communication line can be imagined as a loop of multi-vibrators interconnected by means of low frequency RC filters. If one or two axon links do not respond, the communication is not interrupted, since the amplitude of the actuating pulse is

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89824

S/107/61/000/002/002/003
E073/E535

27,2000 (1080,1331)

AUTHORS: Berestovskiy, G., Engineer and Korniyenko, I.,
Candidate of Biological Sciences

TITLE: Bioelectricity and the Cell

PERIODICAL: Radio, 1961, No.2, pp.17-20

TEXT: In addition to contacts between adjacent nerve cells, the nerves are also interconnected by means of axons. These consist of a protoplasmic core with a membrane which, on the outside, is covered by myeline casing which has good insulating properties. Some axons do not have a myeline casing. In axons with myeline casings the speed of transmission is about 90 m/sec. In the ones without a myeline casing the speed is 7 to 15 m/sec. Experiments with cells have to be carried out with micro-electrodes (metal or glass). Metal electrodes have a point diameter of 1μ and a relatively low resistance (10^4 to 10^6 ohms). Glass electrodes, pipettes filled with electrolyte, can be produced with end point diameters of 0.1μ . However, the resistance of these is very great, 10 to 100 Mohms. In the unexcited state a constant potential difference exists between the internal and the external regions and the membrane seems to play the same role as insulating material in

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A New Harmonic ...

where U is the a.c. voltage across the inductive element;
 f is the oscillation frequency; B_s is the saturation flux
density; Q is the cross-section of the core and w is the
number of turns on the inductive element (half the collector
winding turns). The waveforms of the generator are shown. There
are 2 figures and 3 Soviet references.

SUBMITTED: May 11, 1960

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AUTHORS: Berestovskiy, G.N. and Kostenko, O.A.
TITLE: A New Harmonic Oscillator Using Switched Elements
PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.10,
pp.1743-1744

TEXT: The article describes an improved simple generator which produces sinusoidal oscillations at a frequency ω (up to 400 kc/s) when driven by an external square-wave voltage of frequency ω , $\omega/3$, $\omega/5$,... The external voltage is applied to the bases of two semiconductor switching triodes which are connected as in a voltage converter circuit. The switched wave output is transformer-coupled to a tuned circuit, the inductive element of which has a core material with a square hysteresis loop characteristic. To simplify the circuit, the coupling transformer is used as the inductive element. The instant the core saturates, the magnetizing, and hence the collector current, increases. The following formula is used to find the operating frequency

$$U = 4f\omega B_s Q 10^{-8}$$

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being found tentatively from (8). General efficiency factor is

$$\eta_{gen} \approx \frac{P_{I \cos \varphi}}{\sum P}$$

Losses in transformer core, induction coil, shifting current, and, partially, in transformer coils and resistance r , are equal to the power consumed by an idling oscillator. There are 8 figures; 3 Soviet references.

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the voltage curve approaches to a sinusoid (usually $Q \gg 5$); E is emf of power supply. For an oscillator as shown in Fig. 3a inductance and capacitance of the circuit is found from following equations:

$$\sqrt{L/C} = R'_l / Q, \quad (11)$$

WHERE

$$R'_l = R_l / \cos^2 \varphi; R_l = U_l^2 \cos \varphi / 2P_l; \omega^2 LC = 1. \quad (12)$$

If their magnitudes are acceptable, the circuit is directly connected to the load coil, otherwise a special coil must be added. For a prescribed L or C , transformation coefficient n_{32} is calculated

$$n_{32} = \sqrt{L_l/L} = \sqrt{C/C_l}.$$

Transformation coefficient n , determining voltage amplitude at the load is

$$n_{21} = U_l / \pi \gamma E,$$

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saturation for maximum I_o . Steering by a sine signal is more complicated as the switch-over time takes a noticeable part of the oscillation period. It is recommended therefore to add to the diagram a two-cycle intermediate stage to shape sine voltage into a rectangular wave. With oscillation frequency increased to a value close to the critical frequency to the triode the collector current, due to the inertia of the triode, lags behind; it does not drop to zero because the process of charge dissipation on the base continues a certain time. As a consequence, the coefficient of efficiency and output power drop.

4. Electrical calculation of the oscillator. Basic data for this calculation are: (1) f (or ω) is generated oscillation frequency; (2) U_1 is voltage amplitudes of load; (3) P_1 is full power used by load; R_1 is load resistance; (4) $\cos \varphi$ is for a load having a reactive character; (5) Q is resulting circuit quality (taking the load into account), determining how near

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The role of inductance L is played here by the inductance of the transformer loading windings. The oscillators can operate also without a choke (or with a choke having an inductance $L_{ch} \approx L$); in such a case, the operating conditions will be class B or C. Omitting choke and capacitor C , the converter generating a rectangular wave is arrived at. 3. Triode switching system. It is done by the voltage of a rectangular or a sine-wave. During switching the collector currents of triodes must overlap, their sum remaining always constant and equal I_0 . Overlapping is assured by the selection of a corresponding shift-current imposed on the input through resistance R_{sh} . Voltage U_{sh} and resistance R_{sh} are calculated:

$$U_{sh} = (U_1 + U_2)/2, R_{sh} = (E - U_1)/I_{br}$$

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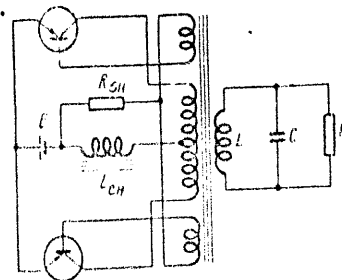
I_{bm} is triode base current assuring operation at

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$$U_{ap} = \pi \gamma E. \quad (9)$$

is derived. A transformer is used to achieve any given output voltage. The introduction into the system of a positive feedback, switches the generator to a self-oscillator. A diagram for such a system is shown in Fig. 5.



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Fig. 5. Diagram of oscillator with self-excitation.

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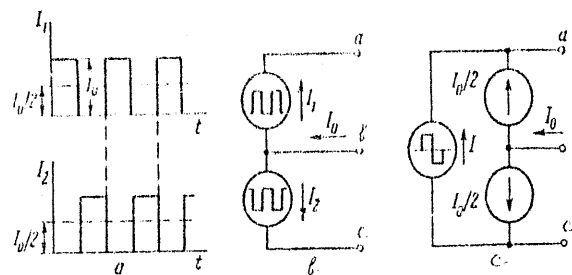


Fig. 4.(a) Pulse shape of collector triode current;
 (b) equivalent oscillator circuit without elimination
 of variable component; (c) circuit with elimination
 of the variable current component.

from (1), (7), (8), the amplitude of output voltage is
 derived as

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